## REMARKS

This Amendment is filed in response to the Office Action mailed March 24, 2009. The Applicant respectfully requests reconsideration. All objections and rejections are respectfully traversed.

Claims 1-23 are pending in the application.

Claims 1, 6, 7, 9-14, 22 and 23 have been amended.

No new claims have been added.

### *Claim Rejections - 35 U.S.C. §112, first paragraph*

At paragraphs 1-2 of the Office Action, claim 23 was rejected under 35 U.S.C. §112, first paragraph in relation to the written description requirement.

MPEP 2163(II)(2) describes that "**[i]formation which is well known in the art need not be described in detail in the specification**. See, e.g., *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1379-80, 231 USPQ 81, 90 (Fed. Cir. 1986)" (emphasis added). Further MPEP 2163(II)(3)(a) reiterates that "**What is conventional or well known to one of ordinary skill in the art need not be disclosed in detail** … If a skilled artisan would have understood the inventor to be in possession of the claimed invention at the time of filing, even if every nuance of the claims is not explicitly described in the specification, then the adequate description requirement is met. See, e.g., *Vas-Cath*, 935 F.2d at 1563, 19 USPQ2d at 1116; *Martin v. Johnson*, 454 F.2d 746, 751, 172 USPQ 391, 395 (CCPA 1972) (**stating 'the description need not be in *ipsis verbis* [i.e., 'in the same words'] to be sufficient**')" (emphasis added).

The Applicant mentions various example of "computer-readable medium" in the detailed description portion of specification. For instance, at page 10, lines 1-4 of the specification, the Applicant describes that "Each bridge preferably includes… associated **memory devices**…." While the exact phrase "computer-readable medium" is not used in this portion of the specification, one of skill in the art would readily understand that instructions may be stored in such **memory devices**, or other type of computer-readable

medium. This type of operation is ubiquitous in the field. Thus, one of skill in the art would have understood the inventors were in possession of this aspect of the claims.

Accordingly, the Applicant respectfully urges that the written description rejection under 35 U.S.C. §112, first paragraph be reconsidered.

***Claim Rejections - 35 U.S.C. §102***

At paragraphs 3-5 of the Office Action, claims 1, 4, 14, 15, 22 and 23 were rejected under 35 U.S.C. §103(a) over IEEE Standards for Local and Metropolitan Area Networks: Virtual Bridge Local Area Networks, IEEE Std. 802.1Q, 1998 (hereinafter "802.1Q") in view of IEEE Standard Part 3: Media Access Control (MAC) Bridges, IEEE Std. 801.1D, 1998 (hereinafter "802.1D"), in further view of Kasao et al., U.S. Publication No. 2003/0195893 (hereinafter "Kasao").

The Applicant's claim 1, representative in part of the other rejected claims, sets forth (emphasis added):

> 1. (CURRENTLY AMENDED) An intermediate network device having a plurality of ports for sending and receiving network messages to and from one or more entities of a computer network at least some of which are segregated into a plurality of virtual local area network (VLANs) defined within the computer network, the intermediate network device comprising:
>
> a compact-Generic Application Registration Protocol (GARP) VLAN Registration Protocol (GVRP) application component associated with a selected port, the compact-GVRP application component having:
>
> a GARP Information Declaration (GID) component configured to maintain VLAN registration state for the selected port in response to receiving attribute events for the VLANs;
>
> a compact-GVRP encoder/decoder unit; and
>
> a GVRP PDU message generator, wherein
>
> the compact-GVRP encoder/decoder unit is configured to ***compute encoded values, in accordance with an encoding algorithm that encodes a plurality of attribute events that are each associated with a different VLAN of a given set of VLANs into each encoded value, and***
>
> the GVRP PDU message generator ***loads the encoded values computed for all of the VLANs defined within the computer network within a single GVRP PDU message*** for transmission from the selected port.

802.1Q describes a conventional form of GVRP where "GVRP allows both end stations and Bridges in a Bridged LAN to issue and revoke declarations relating to memberships of VLANs" *See* 802.1Q, Section 11.2.1. In order to exchange VLAN membership information, bridges and end station exchange GVRP PDU messages. In conventional GVRP PDU messages, a multiple-byte attribute structures is used to express the state of each active VLAN. In the multiple-byte attribute structure, a VID attribute type is encoded in an "Attribute Value" field using two octets, i.e., two bytes. *See* 802.1Q, Section 11.2.3.

802.1D discusses the conventional format of a GARP Protocol Data Unit (PDU). At Section 12.11.1.2, 802.1D states that a conventional GARP PDU includes "[a]n Attribute List consists of one or more *Attributes*…." *See also* 802.1D Fig. 12-6. 802.1D goes on to discuss that "[s]uccessive messages are packed into the GARP PDU, and within each Message, successive Attributes are packed into each Message, until the end of the PDU is encountered or there is no more attributes to pack at that time." *See* 802.1D Section 12.11.3.1. "The PDU has exactly enough room for the first N Attributes that require to be transmitted at the time to be packed. In this case, the PDU is transmitted, and the next N Attributes are encoded in a subsequent PDU." *See* 802.1D Section 12.11.3.1.

Kasao discusses a parallel database where a "hash function is used to determined a database unit to store [a new record] in …." *See* Kasao paragraph 0003, lines 9-11, paragraph 0028, lines 1-6 and Fig. 2, step 25. Kasao discusses techniques of updating hash mappings in response to database alternations. Fig. 3A shows a control table that records a number of divisions (the number of database units) in the database, and a correspondence table (a mapping of the remainder from hash calculations to identifiers of memory units where data is to be stored). *See* Kasao paragraph 0037, lines 3-7.

The Applicant respectfully urges that that both 802.1Q and 802.1D teach away from, and Kasao is silent concerning, the Applicant's claimed "***compute encoded values, in accordance with an encoding algorithm that <u>encodes a plurality of attribute events</u>***

***that are each associated with a different VLAN of a given set of VLANs into each encoded value***" and "***loads the encoded values computed for all of the VLANs defined within the computer network within a single GVRP PDU message*....**"

While conventional GVRP PDU messages that use multiple-byte attribute structures for each VLAN work well in smaller networks, which only have a couple hundred active VLANs, they do not scale well to larger networks. For instance, a L2 Metropolitan Area Network (MAN) may utilize thousands of different VLANs, or conceivably could use all 4096 defined VLANs. As a GVRP PDU message is typically limited to 1500 bytes in size, due to message size limits, using multiple-byte attribute structures for each VLAN presents a significant problem. Namely, if multiple bytes are required to represent the state of each VLAN, and there are thousands of VLANs used in the network, but GVRP PDU messages are limited to 1500 bytes, multiple GVRP message have previously been required to express the state of all the VLANs. As the Applicant discusses in the background section of the Application, in a worst-case scenario, a bridge may need to exchange 11 or more conventional GVRP PDUs to convey membership information for all VLANs, consuming excessive network bandwidth and causing congestion.

The Applicant overcomes this shortcoming, and other shortcomings, by teaching a technique that can store membership information for all VLANs defined in a network in a single GVRP PDU message. As part of such technique, the Applicant encodes a plurality of attribute events that are each associated with a different VLAN of a given set of VLANs into each encoded value stored in the GVRP PDU message.

802.1Q teaches away from ***computing*** "***encoded values, in accordance with an encoding algorithm that encodes a plurality of attribute events that are each associated with a different VLAN of a given set of VLANs into each encoded value***." Instead of representing attribute events for a set of several VLANs by a single encoded value, 802.1Q directs that separate multiple-byte attribute structures are needed for each VLAN. Further, 802.1Q teaches away from ***loading*** "***the encoded values computed for all of the VLANs defined within the computer network within a single GVRP PDU message***."

The conventional GVRP PDU messages of 802.1Q are typically incapable of storing membership information for all VLANs defined within a network, for example for all 4096 defined VLANs, in a single message. There simply is not enough room for all the multiple-byte attribute structures in one message.

Similarly, 802.1D teaches away from ***computing*** "***encoded values, in accordance with an encoding algorithm that*** ***encodes a plurality of attribute events that are each associated with a different VLAN of a given set of VLANs into each encoded value***." Instead of representing attribute events for a set of several VLANs by a single encoded value, 802.1D directs that each VLAN should have its own attribute and "successive attributes are packed into each Message, until the end of the PDU is encountered or there are no more attributes to pack." *See* section 12.11.3.1. Further, 802.1D teaches away from ***loading*** "***the encoded values computed for all of the VLANs defined within the computer network within a single GVRP PDU message***." 802.1D teaches that one will encounter situations where you run out of space in a GVRP PDU and "[t]he PDU has exactly enough room for the first N Attributes that require to be transmitted at the time to be packed. In this case, the PDU is transmitted, and the next N Attributes are encoded in a subsequent PDU." *See* section 12.11.3.1. Thus, one following the teachings of the 802.1D would believe multiple GVRP PDUs are generally needed to disseminate VLAN registration information for a large number of VLANs, for example, for 4096 VLANs.

Finally, the teaching away of 802.1Q and 802.1D is not remedied by further combination with Kasao. Kasao simply describes that hashing may be used to determine where to store a record in a parallel database (*see* Kasao paragraph 0003, lines 9-11, paragraph 0028, lines 1-6 and Fig. 2, step 25) and that a control table (Fig. 3A) may include a mapping of remainders from hash calculations to identifiers of memory units where the data is to be stored (*see* Fig. 3 and paragraph 0027, lines 3-7). Kasao makes no mention of ***encoding*** "***a plurality of attribute events that are each associated with a different VLAN of a given set of VLANs into each encoded value***." Kasao's does not hash his records to create some type of condensed version of the records, rather he hashes

them to generate remainders that indicate where the records should be stored. Further, Kasao does not suggest ***loading "the encoded values computed for all of the VLANs defined within the computer network within a single GVRP PDU message***." Results from Kasao's hash are not computed for all of the VLANs defined within a computer network, nor are they loaded into any GVRP PDU messages. Rather, Kasao uses remainders from hashes in a mapping maintained in a control table.

Accordingly, the Applicant respectfully urges that the combination of 802.1Q, 802.1D and Kasao is legally insufficient to make obvious the present claims under 35 U.S.C. §103(a) because of the absence of the Applicant's claimed novel "***compute encoded values, in accordance with an encoding algorithm that <u>encodes a plurality of attribute events that are each associated with a different VLAN of a given set of VLANs into each encoded value</u>***" and "***<u>loads the encoded values computed for all of the VLANs defined within the computer network within a single GVRP PDU message</u>….***"

At paragraph 6 of the Office Action, claims 2 and 3 were rejected under 35 U.S.C. §103(a) over 802.1Q in view of 802.1D, in further view of Kasao, in still further view of Huang, U.S. Patent No. 4,281,391 (hereinafter "Huang").

At paragraph 7 of the Office Action, claims 5-8, 10, 16, 17 and 19 were rejected under 35 U.S.C. §103(a) over 802.1Q in view of 802.1D, in further view of Kasao, in still further view of Churchyard et al., U.S. Patent No. 7,089,302 (hereinafter "Churchyard").

At paragraph 8 of the Office Action, claims 9, 11, 12, 18, 20 and 21 were rejected under 35 U.S.C. §103(a) over 802.1Q in view of 802.1D, in further view of Kasao, in still further view of Churchyard et al., in still further view of Liu et al., U.S. Publication No. 2004/0061773 (hereinafter "Liu").

At paragraph 9 of the Office Action, claim 13 was rejected under 35 U.S.C. §103(a) over 802.1Q in view of 802.1D, in further view of Kasao, in still further view of

Davis et al, U.S. Publication Number 2003/0043806 (hereinafter "Davis") and "Charachorloo et al., U.S. Publication Number 2002/0087806 (hereinafter "Charachorloo").

The Applicant notes that claims 2, 3, 5-13 and 16-21 are dependent claims that depend from independent claims believed to be allowable for at least the reasons discussed above. Claims 2, 3, 5-13 and 16-21 are believed to be allowable due to their dependency, as well as for other separate reasons.

In the event that the Examiner deems personal contact desirable in disposition of this case, the Examiner is encouraged to call the undersigned attorney at (617) 951-2500.

In summary, all the independent claims are believed to be in condition for allowance and therefore all dependent claims that depend there from are believed to be in condition for allowance. The Applicant respectfully solicits favorable action.

Please charge any additional fee occasioned by this paper to our Deposit Account No. 03-1237.

Respectfully submitted,

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